

(1)

$$\Psi(\mathbf{r}, t)$$

$$\times \hat{U}_{\mathbf{r}, \frac{\tau}{2}}$$

(2)

$$\Psi(\mathbf{r}, t + \tau/2)$$

$$\mathcal{F}$$

$$\Psi(\mathbf{k}, t)$$

$$\times \hat{U}_{\mathbf{k}, \tau}$$

(3)

$$\Psi'(\mathbf{r}, t + \tau/2)$$

$$\mathcal{F}^{-1}$$

$$\Psi(\mathbf{k}, t + \tau)$$

$$\times \hat{U}_{\mathbf{r}, \frac{\tau}{2}}$$

(4)

$$\Psi(\mathbf{r}, t + \tau)$$